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Design and clinical evaluation of a novel self-adjuvanting peptide-based pan influenza A T-cell vaccine

Campbell Bunce
Immune Targeting Systems Ltd, UK

Abstract

Immune Targeting Systems (ITS) has developed a rationally designed, safe, self-adjuvanting vaccine technology that induces robust cell mediated immune (CMI) responses to peptide antigens. The vaccine concept is based on linking a fluorocarbon chain to long immunogenic peptides. These 'fluoropeptides' bearing specific physico-chemical properties spontaneously form micelles in solution and enhance immunogenicity by the formation of an *in vivo* short-term depot thereby allowing efficient exposure of peptide antigens to the immune system.

ITS' has applied this Depovaccine™ technology to its lead programme Flunisyn™, an influenza T cell vaccine designed to target all seasonal and pandemic strains of influenza A. Flunisyn consists of 6 fluoropeptides developed using a proprietary bioinformatics platform. Each fluoropeptide encapsulates multiple CD4+ and CD8+ T cell epitopes, derived from conserved internal influenza proteins, which are predicted to bind to multiple HLA-types thereby granting the vaccine broad population coverage irrespective of ethnicity. Flunisyn™ has completed two dose finding studies in young, healthy adult volunteers and recently a third study in the elderly population (median age of 71 years).

From the clinical studies, Flunisyn™ was demonstrated to be safe and well tolerated across young and old members of the population, inducing a broad cross-reactive anti-viral CMI response to multiple, distinct influenza A viruses (H1N1 to H9N2). These properties offer the unique position for Flunisyn™ as a truly pan-influenza A vaccine for seasonal and pandemic use. Flunisyn's ability to induce a robust immune response in the elderly population is of particular importance where conventional, HA-based influenza vaccines have proven to be poorly effective

Biography

Campbell has a PhD in Immunology awarded by the School of Medicine, University of Manchester, UK. After a post-doctorate at Imperial College, London, he joined the biotechnology sector where he has been developing novel immunomodulating therapies and vaccines for 16 years. Campbell joined ITS as R&D Director in 2009 managing the company through the transition from pre-clinical research to clinical development of the platform Depovaccine technology. Campbell has published a number of papers on T cell immunology and novel immunomodulating technologies.